

Awareness and knowledge of Sexually Transmitted Infection (STI) among Nursing students in a tertiary institution in Nnewi, Anambra state.

Abstract

Background

Sexually transmitted infections (STIs) are an umbrella term for a range of contagious diseases typically spread through intimate contact. More than one million cases of STIs occur every day across the globe, the majority of which remain symptomless. Sexually transmitted infections (STIs) are a major global health problem, with more than 340 million new cases occurring every year worldwide.

Method: A cross-sectional survey that determined levels of awareness and knowledge of Sexually Transmitted Infection (STI) among Nursing students in a tertiary institution in Anambra state using descriptive cross-sectional study design. A simple random technique was used to select 209 undergraduates in a tertiary institution in Anambra state.

Results: The respondents were 209 nursing students comprising 13%, 24%, 31% and 32% of second year, third year, fourth year and fifth year students respectively. The respondents were more female (81.3%) than male (18.7%) gender. The study revealed that 202 (96.7%) are aware of sexually transmitted infections and majority of the respondents got STI information through their friends (95.7%) and Television station (91.9%). Very high percentage of the respondents 198 (94.7%), 206 (98.6%), 193 (92.3%) and 194 (93%) know that STI affects both men and women, HIV/AIDS, Gonorrhoea and Syphilis are STI respectively. However, a lower percentages of respondents 137 (65.6%), 135 (64.6%), 131 (62.7%), 127 (60.8%), and 106 (50.7%) know that genital warts, Human papilloma Virus, Genital Herpes, Chlamydia and Trichomoniasis to be STIs respectively. Vaginal discharge and painful sexual intercourse were the most well-known signs and symptoms. Almost all the respondents (97.6%) knew that STIs can be prevented but very few (15.3%) knew that STIs can be cured.

There is a need to increase sensitization of young people on sexually transmitted diseases and their complications to improve the knowledge of all prevalent sexually transmitted diseases among youths.

Keywords: Sexually transmitted diseases; Nursing students, knowledge, Awareness, Anambra state.

Background to Study

Sexually transmitted infections (STIs) are an umbrella term for a range of contagious diseases typically spread through intimate contact. And it also includes any sort of physical contact with another person, including mother-to-child transmission from pregnancy and childbirth, blood product and tissue transfer (Petry et al., 2019). STIs are caused by more than 30 pathogens, including bacteria, viruses, protozoa, and fungi. STIs can be recognized as curable and incurable. The common curable STIs are Gonorrhoea, Syphilis, Chancroid, Chlamydia, Trichomoniasis and lymphogranuloma Donovan's (Rashida *et al.*, 2023). STIs are interrelated, meaning that getting one can heighten the chances of catching other infections, including HIV (Karamouzian et al., 2017).

According to the World Health Organization, more than one million cases of STIs occur every day across the globe, the majority of which remain symptomless (Habu et al., 2018). Sexually transmitted infections (STIs) are a major global health problem, with more than 340 million new cases occurring every year worldwide. In 2016, 376 million new infections were reported that included the following four STIs: trichomoniasis (156 million), Chlamydia (127.2 million), gonorrhoea (86.9 million), and syphilis (6.3 million). In addition, >500 million subjects have been reported to have a genital infection by herpes simplex virus (HSV), and >290 million women with human papillomavirus (HPV) infection are estimated annually (Voyiatzaki et al., 2021). Young people are mostly at risk from STIs, although they represent only 25% of the sexually active population. According to the latest data, young people aged 15–24 years represent almost 50% of all newly acquired STIs worldwide (Vasudeva et al., 2022). In the United State, there are estimated 15.3 million new cases of

sexually transmitted infections each year and 3 million of which occur in people between the ages of 13-19 and one out of four sexually active teenagers reported a sexually transmitted infection every year. Nearly two third (2/3) of all sexually transmitted infections occur in people younger than 25 years of age (Habu *et al.*, 2018).

In Africa, the high prevalence of HIV is connected to a high percentage of STIs that are untreated or inadequately treated. Africa currently accounts for 20–35% of the global burden of curable and non-curable STIs (Nzopotam *et al.*, 2022). Based on the study findings from southern Ethiopia, only 36% of school students had good awareness about the prevention of STIs. More than half (52.2%) of students had multiple sexual partners, where 11% had sexual intercourse with commercial sex workers. Similarly, in the study findings from Gondar and Bahir Dar city, 39% and 65.2% of school students had good awareness about the prevention of STIs, respectively (Yilkal & Mulusew, 2020). Treatments for HIV and other STIs are not readily available in sub-Saharan Africa and other resource-limited areas, where the prevalence of HIV and other STIs is high. In the absence of treatment and laboratory infrastructure to monitor treatment efficacy, increasing awareness of STIs and STIs screening are crucial components of STIs prevention programs (Vasudeva *et al.*, 2022).

In Nigeria, a recent study found that there is a high prevalence of STDs among student (Nzopotam *et al.* 2022). More than half of the respondents (54.2%) had poor knowledge of symptoms of sexually transmitted infections. Only 13.9% were aware that sexually transmitted infections could be asymptomatic. The self-reported prevalence of symptomatic sexually transmitted infections was 36.5%(Sekoni *et al.*, 2013). Another study in Nigeria concluded that there was a gap in knowledge and preventive practices of STIs among young unmarried people(Oluwole *et al.*, 2020).

Untreated or poorly managed STIs could cause many complications including long term unfavorable clinical sequel to the individuals. Syphilis can increase the risk of acquiring HIV three-fold or more in all humans. Gonorrhoea as well as Chlamydia trachomatis infection causes epididymitis resulting in infertility among males. In females, pelvic inflammatory disease, dyspareunia, infertility and chronic pelvic pain, which could upsurge the risk of ectopic pregnancies, abortions, stillbirths, perinatal and neonatal morbidities(Nidup *et al.*, 2023).

However, knowledge of other STIs is limited, this may be due to the widespread publicity accorded to HIV, neglecting other STIs which may predispose them to HIV (El-Duah et al., 2021). The assessment of STIs awareness among young adults is essential to develop effective strategies for STI protective measures. Increasing STIs awareness, as the most effective protective approach, could reduce the rate of people with STIs (Amirkhanzadeh Barandouzi & Cong, 2019). One of the most effective protective methods against STIs is the consistent and correct use of condoms during sexual activity. Another important protective measure against STIs is early detection and treatment. Screening for STIs among sexually active individuals is necessary and treating infections before they cause long term health complications. There are several STI protection measures, and they include: Abstinence, being faithful to a faithful partner, using condoms consistently and correctly, avoiding excessive use of alcohol or drugs, vaccination, early diagnosis and treatment (Nwabueze *et al.*, 2014

More worrisome is the declining age of first sexual intercourse all over the world including Nigeria (S & G, 2018). Early exposure to sexual intercourse may likely lead to multiple sexual partners with its consequence of STIs (Rashida *et al.*, 2023). Sexually transmitted infections (STIs) are of public health importance as over 1 million STIs are acquired daily worldwide. One-third of the new cases of curable STIs affect younger persons aged less than 25 years. Sexually transmitted infections can lead to severe complications beyond the immediate impact of infections as such infertility. This study assessed knowledge of, attitude towards and preventive practices of STI among young unmarried persons in Surulere local government area (LGA) of Lagos State, Nigeria. The study was conducted among young unmarried persons in Surulere LGA, Lagos State, Nigeria, between June and November 2018. A descriptive cross-sectional study was conducted among 450 young unmarried persons selected using a multistage sampling technique and majority of the respondents (84.7%) had heard of STIs. About two-third (65.6%) had good knowledge, while majority (98.6%) had good attitude towards the prevention of STIs, but less than half (34.0%) had good preventive practices. Knowledge of STI was statistically significantly associated with age, level of education, attitude and preventive practices of the respondents. Most of the respondents were aware and had good attitude towards prevention of STI, but gaps exist in knowledge and preventive practices. Hence, targeted education to improve the knowledge

and preventive practices against STI among young unmarried persons is recommended (Oluwole et al., 2020). The increased incidence of these infections and their scourge posed a greater challenge on the healthcare system as they contribute to increase in the morbidity and mortality rate among youth, and exert a high physical and emotional toll on the afflicted individual as well as an economic burden on the individual, family, community and the health care system in general (Habu *et al.*, 2018). Studies indicate that young university students, aged 18 to 29 years, are more vulnerable to STIs, considering the feeling of autonomy, rejection to follow rules, the beginning of sexual life, the variability of partners and the university scenario itself, which favors the appearance and consolidation of certain behaviors, especially those related to alcohol and drug consumption (Freitas, Eloi & Felix, 2022).

There is paucity of evidence on the level of knowledge of STI among young people in our context despite the gap in the knowledge found in previous study in Nigeria. This study tries to provide evidence on the level of knowledge of STIs including the protection methods among students of a tertiary institution in Anambra state. The study is important to create awareness among educators and policy makers on the level of awareness of STIs among youths. The findings will inform the public of the level of knowledge of STIs among the youths which will help the health programme planners to prioritize the needs of the society generally and youths in particular.

Materials and Method

The study adopted a descriptive cross-sectional study design. A simple random technique was used to select 209 undergraduates in a tertiary institution in Anambra state.

Data was collected using a validated self-structured questionnaire with four (4) sections. Section A consist of 6 items and was based on the socio-demographic data of the respondents, section B consists of 6 items which was used to assess the student awareness of sexually transmitted infections, section C consists of 2 items and was used to divulge information on the students awareness on the health consequences of sexually transmitted infection, section D consists of 6 items and was used to ascertain the student awareness on the protection methods used against sexually transmitted infection. The questionnaires

were administered using online Google form. Data collected was analyzed using SPSS version 25.0. for Descriptive statistical techniques which include percentages, frequencies and presented in tables. Ethical approval was obtained from the Research ethics committee of the faculty of Health sciences and Technology, Nnamdi Azikiwe university, Nnewi campus, Nnewi. Verbal consent was also obtained from the students before the questionnaire google forms were sent out. We maintained confidentiality of all the information provided and the anonymity of the respondents was maintained.

UNDER PEER REVIEW

Results

TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

Questions	Options	Frequency	Percentage (%)
Age	15-19 years	16	7.6
	20-24 years	149	71.3
	25-29 years	27	13
	30 years and above	17	8.1
Sex	Male	39	18.7
	Female	170	81.3
Religion	Christian	190	91
	Muslim	13	6.2
	Traditionalist	6	2.8
Ethnic group	Igbo	172	82.3
	Yoruba	24	11.5
	Hausa	13	6.2
Educational level	2 nd Year	27	13
	3 rd Year	50	24
	4 th Year	65	31
	5 th Year	67	32
Marital status	Single	165	79
	Married	42	20
	Divorced	2	1

Table 1 above showed that out of the 209 respondents involved in this study, 15 (7.6%) of them were between the ages of 15-19, while 149 (71.3%) were between 20-24 years, 27 (13%) were between 25-29 years, 17 (8.1%) were between 30 years and above. Majority of the respondents 170 (81.3%) were female while 39 (18.7%) were males. The table also shows that majority of the respondents 190 (91%) were Christian and of Igbo ethnic group (82.3%). Majority of the respondents 165 (79%) were single, while 42 (20%) were married and 2 (1%) were divorced.

Table 2 : Awareness of Sexually transmitted infections

Variable	Options	Frequency	Percentage (%)
Ever heard of STI	Yes	202	96.7
	No	7	3.3
Source of information	TV/radio	192	91.9
	Newspaper	97	46.4
	Public talks/seminar	173	82.8
	Billboard/posters	133	63.6
	Hospital/ health workers	137	65.6
	School teachers	185	88.5
	Friends	200	95.7
	Parents	117	56
	I read it on my own	129	61.7

Table 2 above shows that a greater percentage of the respondents 202 (96.7%) are aware of sexually transmitted infections and the major sources of STIs information are from Friends 200 (95.7%), TV/Radio 192 (91.9%), School teachers 185 (88.5%) and Seminars/Public talks 173 (82.8%). The table also show that 137 (65.6%) had ever heard about STIs through hospital/ health workers, 133 (63.6%) through Billboard/posters, 129 (61.7%) while through personal readings , 117 (56%) through their Parents, and 97 (46.4%) through the Newspaper.

Table 3: Knowledge of Sexually Transmitted Infection

Variable	Options	Frequency	Percentage (%)
STIs affects both sexes	Yes	198	94.7
	No	11	5.3
STIs you know	HIV/AIDS	206	98.6
	Sickle cell anaemia	15	7.2
	Gonorrhoea	193	92.3
	Syphilis	194	93
	Typhoid	7	3.3
	Trichomoniasis	106	50.7
	Genital warts	137	65.6
	Pneumonia	8	3.8
	Human papilloma virus	135	64.6
	Chlamydia	127	60.8
	Malaria	2	1
	Genital herpes	131	62.7
	Diarrhea	4	2
	Causes of STI	Bacteria	177
Virus		201	96.2
Bad hygiene		27	13
Drinking unclean water		3	1.4
Fungi		157	75
Having sex during menses		41	19.6
Protozoa		112	53.6
Witchcraft		14	6.7
Mosquito		7	3.3
How to contact STI	Needle and syringes	173	82.8
	Blood and blood products	195	93.3
	Sharing the same plate with an infection person	24	11.5
	Unprotected sexual intercourse	206	98.6
	Mother to child	186	89
	Sharing the same toilet with an infected person	35	16.7
	Exposure to cough of an infected person	42	20.1
	Kissing	67	32.1

Table 3 show that majority of the respondents 198 (94.7%) agreed that sexually transmitted infections affect both men and women. More than two thirds of the respondents 98.6%,

92.3% and 93% know that HIV/AIDs, Gonorrhoea, Syphilis respectively are Sexually transmitted Infections. Unfortunately, a fewer number 137 (65.6%) , 135 (65.6%), 131 (62.7%) and 127 (60.8%) knew that genital wart, Human Papilloma Virus(HPV), Genital Herpes and Chlamydia respectively are STIs.

The table also depicts that majority of the respondents indicated that the cause of STIs is Virus 201 (96.2%), Bacteria 177 (84.7%), Fungi 157 (75%) and Protozoa 121 (53.6%). Others are of the opinion that the cause of STIs include bad hygiene 27 (13%), having sex during menses 41 (19.6%), witchcraft 14 (6.7%), Mosquito 7 (3.3%) and drinking unclean water 3 (1.4%).

Also from the table, majority of the respondents indicated that STIs can be contracted through unprotected sexual intercourse 206 (98.6%), while 195 (93.3%) believed that it can be contracted through blood and blood products, 173 (82.8%) believed that it can be contacted through needle and syringes, while 186 (89%) stated that it can be contracted through Mother to child, while others stated that through kissing 67 (32.1%), Exposure to cough of an infected person 42 (20.1%), sharing the same toilet with an infection person 35 (16.7%), sharing the same plate with an infected person 24 (11.5%) are means through which STIs can be contracted.

Table 4: Knowledge of Clinical manifestations of Sexually transmitted infections

Questions	Options	Frequency	Percentage (%)
Signs & symptoms	Weight loss	153	73.2
	Burning pain while urinating	168	80.4
	Wound/sore in the genital area	165	79
	Body rash	74	35.4
	Frequent urination	110	52.6
	Anal discharge	81	38.8
	Penile discharge	156	74.6
	Lower abdominal pain	116	55.5
	Blood in urine	173	82.8
	Painful sexual intercourse	201	96.2
	Chest pain	24	11.5
	Painful, swollen testicles	131	62.7
	Vaginal discharge	197	94.3
	Complications	Neonatal conjunctivitis	118
Preterm labour		127	60.8
Ectopic pregnancy		100	47.8
Death		185	88.5
Prostate cancer		100	47.8
Still birth		122	58.4
Miscarriage		185	88.5
Cervical cancer		133	63.6
Infertility in women		205	98.1
Testicular cancer		119	56.9
male Impotence		200	95.7
Unwanted pregnancy	19	9.1	

Table 4 shows that high percentage of the respondent 201 (96.2%), 197 (94.3%), 173 (82.8%) and 168 (80.4%) know that painful sexual intercourse, vaginal discharge, Blood in urine, burning pain while urinating are signs and symptoms of STIs. While 165 (79%), 156 (74.6%) and 153 (73.2%) believe that wound/sore in the genital area, penile discharge and weight loss are signs and symptoms of STI. Only 116 (55.5%) and, 74 (35.4%) stated that lower abdominal pain and body rash are signs and symptoms of STI. The table also show that 205 (98.1%) and 200 (95.7%) of respondents know that infertility in women and male impotence

are complications of STIs. While the same number of respondents 185 (88.5%) believed that death and miscarriage are complications of STIs. Only 133 (63.6%) stated cervical cancer as a complication of STIs.

Table 5: Knowledge of prognosis and Protective strategies for sexually transmitted infectio

Questions	Options	Frequency	Percentage (%)
STIs can be prevented	Yes	204	97.6
	No	5	2.4
STIs can be cured	Yes	32	15.3
	No	177	84.7
Abstinence	Yes	204	100
	No	0	0
Use of condom	Yes	181	88.7
	No	23	11.3
Avoiding Multiple sexual partners	Yes	185	90.7
	No	19	9.3
Use of herbs	Yes	38	18.6
	No	166	81.4

Table 5 showed that a greater percentage of the respondents 177 (84.7%) indicated that sexually transmitted cannot be cured. The table also shows that most of the respondent 204 (97.6%) believed that sexually transmitted infections can be prevented. However, all the respondent 209 (100%) indicated that abstinence as a method to prevent sexually

transmitted infections while a lower number 181 (88.7%) indicated that the use of condoms during sexual activity can control sexually transmitted infections. The table also revealed that 185 (90.7%) indicated that avoiding multiple sexual partners can help prevent contracting sexually transmitted infections. Interestingly, some respondents 38 (18.6%) indicated use of herbs as a strategy to prevent sexually transmitted infections.

Discussions

The findings revealed high awareness (96.7%) of awareness of sexually transmitted infections among the nursing students. The finding may be because the respondents are health professionals in training and have the privilege of hearing about sexually transmitted infections during their lectures and clinical experiences. This reflects how education plays a crucial role in awareness creation in critical issues including STIs. The finding may also be connected to the fact that respondents are mainly young people who are actively involved in digital world thereby having access to liberal information including STIs information. At in this digital age might have contributed significantly to raising awareness. Social media has shown to promote awareness campaigns for health issues (Mohammed et al., 2021). This is in conformity to the study carried out by Amu *et al.*, in 2015 on Awareness and Knowledge of Sexually Transmitted Infections among Secondary School Adolescents in Ado Ekiti, Southwestern Nigeria that found 92.4% respondents had heard about sexually transmitted infections. Another similar study that looked specifically on unmarried youths in Nigeria found a lower 84.7% awareness of STIs (Oluwole et al., 2020) The higher percentage seen in our study may be because our respondents are both married and unmarried. We also found that the most popular sources of information on STIs are Friends (95.7%), Radio/TV (91.9%), School teachers (88.5%) and Public talk/seminars (82.8%). This is like finding from another study in Nigeria that found the three most important sources of STIs information as electronic media (68.7%); teachers (68.1%); and print media (44.9%) (Amu & Adegun, 2015) although with varying percentages. A more recent study supports our results as it identified school as one of the major sources of information/education of STIs (Koray et al., 2022).

The findings from this study revealed that the respondents understand the diverse arrays of signs and symptoms associated with STIs both. However, while more than half of the

respondents know that painful sexual intercourse (96.2%), vaginal discharge (94.3%), blood in urine (82.8%) , burning pain while urinating (80.4%), wound sore in genital area (79%) , penile discharge (74.6%),weigh loss (73.2%) lower abdominal pain (55.5%) , swollen testicles (62.7%) and frequency of urination (52.6%). Less than half of the respondents stated that anal discharge (38.8%), body rash (35.4%) and chest pain 24 (11.5%) are signs and symptoms of sexually transmitted infections. The revelation from this study is somewhat worrisome because deficient knowledge of the signs and symptoms of STIs will lead to poor management of STIs among young people. Insufficient knowledge about sexually transmitted infections has been identified is the major barrier to successfully prevent infection among young adult populations (Dula et al., 2017.). STIs have a direct impact on sexual and reproductive health through stigmatization, infertility, cancers and pregnancy complications and can increase the risk of HIV(*Sexually Transmitted Infections (STIs)*, n.d.). Contrary to our findings, a similar study found less than 50% of respondents knew about the symptoms of STIs (Subbarao & Akhilesh, 2017). Another similar study in Nigeria revealed that the most important symptoms of STIs are weight loss, painful micturition, and genital ulcer(Amu & Adegun, 2015). Our contrary to our findings. The wide disparity seen in Subbarao and Akhilesh , 2017 study may be because the majority of the respondents are male gender (75%)while our study had more female gender (81%).Moreover, in Amu & Adegun, 2015 study, the respondents were secondary school students while ours were University students.

This study also revealed that not all respondents believe that sexual transmitted infections affect both genders. This is not a good development as sexual transmitted infections are known to affect all gender (male and female) and believing that it is not for both gender is likely to create a negative attitude to prevention and control of STIs among young people. Most Sexual transmitted Infections effect both male and female gender who are sexually active(*Sexually Transmitted Infections*, n.d.). Notwithstanding evidence show that STIs affect more women than men due to reproductive tract biology of women (Aral et al., 2004; Van Gerwen et al., 2022). We also found that there is varying levels of knowledge of diseases categorized as STIs among the respondents. HIV/AIDs, Syphilis and gonorrhoea were the most notable conditions known as STIs although few people (less than 10%) do not know.

Our finding agrees with findings from a similar study that found HIV/AIDs as the STI popularly known by people (Subbarao & Akhilesh, 2017). Unfortunately, approximately 65% of the respondents know that Human Papilloma Virus is a sexually transmitted disease despite the fact that the majority of the respondents are female young adult. This calls for concern across the health stakeholders in time where the prevalence of cervical cancer is increasing (Lawson et al., 2023). In Nigeria, cervical cancer is the second most common cancer and the second most frequent cause of cancer deaths among women aged between 15 and 44 years and Human Papilloma Virus is one of the major cause of cervical cancer (Cervical Cancer - Early Detection Saves Lives | WHO | Regional Office for Africa, 2023). Not knowing the disease conditions that are STIs despite their level of education and age range. Poor knowledge of diseases that constitute STIs is likely to promote exposure to diseases considering that majority of the respondents are between the ages of 20 to 24 years. This is quite contrary to the findings of (Koray et al., 2022) in Ghana where most of senior high school students demonstrated a good knowledge of STI's with their symptoms.

We also found that a good number of respondents are not sure of how to contact STIs. While majority of the respondents knew that STIs will be contacted through unprotected sex, blood and blood products, some people believed that using one toilet and eating in the same plate can transmit STIs. This is a pointer to the level of stigmatization and discrimination experienced by people diagnosed with STIs. Previous study in Nigeria revealed that high level of health-related stigmatization and discrimination among People Living with Human Immunodeficiency Virus (PLHIV) in Nigeria (Adekoya et al., 2024). Also, in a similar study in India, G et al., (2023) discovered that people had negative attitudes towards those infected with STI's making them to suffer social and institutional stigmatization. (G et al., 2023)

This study revealed that the majority (84.7%) of respondents do not know that STIs can be cured. This may not be unconnected with the fact that most viral STIs like HIV/AIDs are not curable, and the respondents felt that it applies to all STIs. The revelation is not good for effective management of STIs as it can lead to poor health seeking behavior among young people with STIs. Type of illness has been identified as one of the major factors that influence individual's the health seeking behaviour (Cronin et al., 2013; Webair & Bin-Gouth, 2013). However, most of the respondent 204 (97.6%) know that sexually transmitted

infections can be prevented. This is in conformity with the study carried out by Habu *et al.*, in 2018 on the Awareness and Practice of prevention of Sexually Transmitted Infections among adolescents in Demonstration Secondary School, University Maiduguri, that most of the respondents (72.7%) agreed that STIs are preventable. We also found that all the respondent 209 (100%) indicated abstinence as a method to avoid contracting sexually transmitted infections and approximately 19% of the nursing students believed that use of herbs can prevent STIs. It is important that student nurses have sufficient knowledge of STIs because knowledge of STIs can also influence patient management(Hamunyela et al., 2024).

Conclusion

There is good level of awareness of STIs among student nurses, however, there seems to be inadequate knowledge of STIs ranging from the signs and symptoms, prevention and prognosis of STI. There is a need to intensify awareness and education programmes regarding STIs from secondary school age to enable young people acquaint with issues related to STIs for personal health related decisions that promotes health growth and relationship among young people.

Disclaimer (Artificial intelligence)

Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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